REMARKS

Claims 1-37 are pending and under active consideration in this application. Claims 2-9, 15-17, 33, and 36 were amended to correct an informality.

Claims 1-9 and 11-17 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,177,694 to Graham et al. ("Graham"). Graham discloses a method of computerized color matching of articles, which includes the steps of generating a color map and/or computer enhanced photograph of the associated articles using a computer, the color map and/or enhanced photograph identifying the color(s) of the associated articles relative to an absolute set of colors (Col. 2, lines 3-6 and 12-16). The map and/or photograph may thereafter be taken to a laboratory for analysis (Col. 5, lines 1-12).

The dentist in Graham first takes photographs of the patient's teeth (Col. 3, lines 62-63). A second photograph is taken with a standard reference strip to enable the actual colors and shade variations of the teeth to be matched (Col. 3, lines 67-68 and Col 4, lines 1-3). The photographs are stored in a diskette (Col. 4, lines 63-68). The diskette is thereafter transported to an analysis laboratory (Col. 5, lines 1-9). An operator then performs a series of operations on it and produces a "porcelain key overlay" (*See* Col. 5, lines 14-29). A computer compares the standard reference strip as photographed with an absolute reference strip and generates a compensation factor to bring the two into conformity (Col. 5, lines 30-33) and produces a corrected photograph (Col. 5, lines 33-35). The "porcelain key overlay," which shows the different shades of porcelain, is overlaid over the corrected photograph (Col. 5, lines 39-40), and a porcelain coded map (Col. 5, lines 41-42) is generated. All this data is recorded back into the diskette (Col. 5, lines 42-45). The diskette is then returned to the dentist (Col. 5, lines 46-49). From the porcelain coded map supplied by the dentist, the dental technician can proceed to produce the dental cap or prosthetic tooth using his professional skills (Col. 5, lines 50-53). The dental technician can accurately match the color of the cap or prosthetic tooth to the patient's teeth using his professional skills and his knowledge of the porcelain powder components and preparation conditions (Col. 5, lines 53-58).

Claims 1 and 11 were amended to include the further step of designing a preliminary treatment plan for addressing the dental needs of the patient (Specification, page 4, lines 18-19, and original claim 18). Graham does not disclose or suggest this step at all. Instead, Graham merely attempts to color match the photographed tooth by identifying the color of the tooth relative to an absolute set of colors (Col. 2, lines 3-16), with no initial

analysis at all. This is quite different from preparing an initial treatment plan and later receiving restorative options from a technician in a dental laboratory.

In fact, Graham shows the dentist sending the images to a lab where a computer analyzes them. The modified images are then sent to a technician to determine the correct color match. Indeed, the dentist relies completely on the technician and computer to perform the analysis correctly, without providing any input of any kind. Thus, it appears that the dentist plays a minimal role in the overall process. There is no need for him to take time to design a preliminary treatment plan. Graham suggests that the dentist need not take any additional steps besides taking the picture.

In contrast, the present method includes this additional step to ensure that the final prosthesis or restoration is the best possible fit and match for the patient, thereby avoiding a waste of the patient's and dentist's time. The preliminary treatment plan can be forwarded to and evaluated by the laboratory before a final treatment plan is formulated and communicated to the dentist. This allows the dentist and technician to assess the case together. Graham focuses mainly on the computer analyzing the data and providing the right color match rather than on interactive communication between the dentist and the lab preparing the prosthesis (*See* FIG.1).

Moreover, Graham discloses only shade restoration. The present invention is capable of communicating much more than that. For example, it can provide information on materials, procedures involved in using the materials, and instruments to be used in the procedure. Thus, the application of the present method is much broader than that of Graham. While Graham can only be used to determine if the correct color is used, the method of the present invention can be used to determine if the overall prosthesis is correct.

Thus, claims 1 and 11 cannot be anticipated by Graham. Because claims 2-9 and 12-17 depend from claims 1 and 11 respectively, they also cannot be anticipated by Graham, and the rejection should be withdrawn.

Claims 1-37 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,190,170 to Morris et al. ("Morris"). Morris teaches an automated tooth shade analysis and matching system. A computer-aided system provides apparatus and methods for capturing an image of a patient's teeth for the purposes of reproducing the inherent coloration and shading in restorative procedures and prosthetics (Col. 2, lines 20-27). A dentist acquires the digital images of a patient's teeth (Col. 3, lines 58-60). After acquiring the images, the dentist sends the images to a dental laboratory for analysis by a lab technician (Col. 4, lines 56-58). Upon receiving the images, the lab technician analyzes the

images (Col. 5, lines 13-14). The technician selects an image for analysis and normalizes the selected image (Col. 5, lines 29-31). Once the image is normalized, the technician selects the shade standards to be used in manufacturing the prosthetic tooth (Col. 6, lines 27-30). Once the patient images have been analyzed, the technician manufactures the prosthetic tooth (Col. 7, lines 17-19). The technician then analyzes the quality of the prosthetic tooth by comparing a normalized image of the prosthetic tooth with the normalized image of the patient's natural tooth (Col. 7, lines 20-24). Once the technician has confirmed that the prosthetic tooth meets a specified quality standard, the technician can send an image of the prosthetic tooth to the dentist so the dentist can confirm the quality of the tooth (Col. 7, lines 34-38). The dentist can then contact the patient so that the dentist and patient can confer and agree as to the acceptability of the prosthesis (Col. 7, lines 39-41). If changes are required, those can be conveyed to the lab technician for implementation into the image for final review before the actual prosthetic tooth is completed (Col. 7, lines 43-46). Once the dentist authorizes delivery of the prosthetic tooth, the technician sends the tooth to the dentist, and the dentist installs the tooth in the patient (Col. 7, lines 46-49).

As recited previously, claims 1 and 11 now include the step of preparing a preliminary treatment plan, and claim 10 now recites this feature. Like Graham, Morris does not disclose this step. Instead, Morris shows a technician performing substantially all of the analysis, forming the tooth, and sending the tooth back to the dentist (*See* FIG. 2A). Only after the prosthetic tooth has been made does the dentist re-enter the process. Thereafter, he conveys any necessary changes to the technician, who forms another tooth.

As is readily apparent from the above description, the dentist of Morris makes no preliminary analysis as to what the right shade of color should be and does not communicate any of this information to the lab. Like Graham, the dentist of Morris does not perform much analysis and depends heavily on the work of others. Indeed, Morris implies that preliminary analysis is not required since the software will analyze the images and perform the color matching.

Claims 18 and 32 were amended to change "designing a preliminary treatment plant that includes design criteria for preparation of a dental prosthesis to be placed in the patient to satisfy the dental restoration need" to "designing a preliminary treatment plan for addressing the dental needs of the patient" (Specification, page 4, lines 18-19). Independent claims 18 and 32 already recite the feature of designing a preliminary treatment plan, and that feature distinguishes those claims from Morris in the same manner as claims 1,

10, and 11. Thus, all independent claims are in condition for allowance. As claims 2-9, 12-17, 19-31, and 33-37 depend from claims 1, 10, 11, 18, or 32, they should also be allowed.

Finally, claims 10 and 18-37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Graham. As already explained above, claims 10, 18, and 32 all recite a feature that is not disclosed in Graham. Furthermore, there is nothing in Graham that suggests including the additional step of designing a preliminary treatment plan. Indeed, Graham discourages both the dentist and technician from performing a color analysis. "[T]he dentist and the technician are most likely to have different colour perceptions of the colours under a standard reference light, let alone under different lights" (Col. 1, lines 27-29). A preliminary treatment plan is futile in view of Graham since the color perceptions for each individual would be so different. For these reasons, claims 10 and 18-37 are not obvious in light of Graham.

In view of the above, all rejections have been overcome and should be withdrawn. Accordingly, the entire application is believed to be in condition for allowance, early notice of which would be appreciated.

Respectfully submitted,

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